

# ECG785

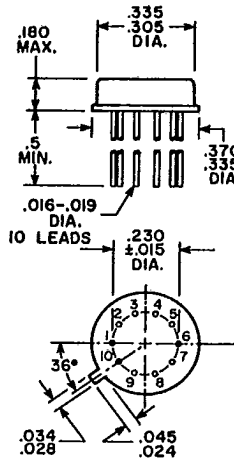
ULTRA-HIGH-GAIN  
WIDE-BAND AMPLIFIER ARRAY

T-74-09-01

- Three Individual General-Purpose Amplifiers
- Ideal for service in Remote-Control Amplifiers  
— e.g., TV Receivers

**HIGHLIGHTS**

- Three separate amplifiers — gain and bandwidth for each amplifier can be adjusted with suitable external circuitry
- Amplifiers operable independently or in cascade
- Exceptionally high cascade voltage gain — 129 dB typ. at 40 kHz
- Low noise performance
- Wide-band response
- All amplifiers single-ended — only one power supply required
- Wide operating temperature range —  $-55^{\circ}\text{C}$  to  $+125^{\circ}\text{C}$
- Built-in temperature compensation



**TYPICAL REMOTE CONTROL SYSTEM**

**SCHEMATIC DIAGRAM**

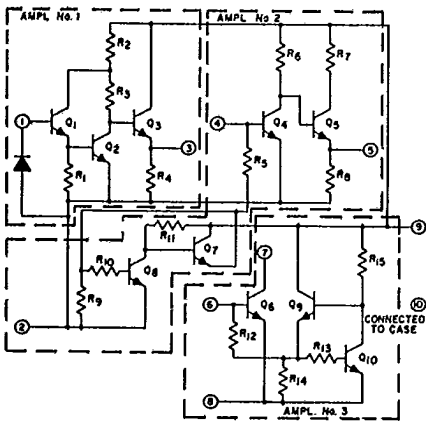


Fig. 1

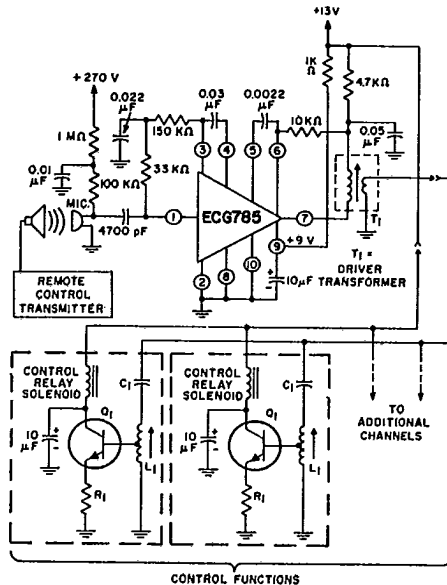


Fig. 2

**ABSOLUTE-MAXIMUM RATINGS:**

Operating Temperature Range . . . . . -55°C to +125°C  
 Storage Temperature Range . . . . . -65°C to +200°C  
 Device Dissipation . . . . . 300 mW  
 Input Voltage . . . . . 1 V p-p  
 Supply Voltage . . . . . +15V

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**ELECTRICAL CHARACTERISTICS AT T<sub>A</sub> = 25°C**

CHARACTERISTICS	SYMBOLS	SPECIAL TEST CONDITIONS	TEST CIRCUITS AND CHARACTERISTICS CURVES	LIMITS			UNITS
				ECG785			
				Min.	Typ.	Max.	
<b>STATIC CHARACTERISTICS</b>							
Quiescent Operating Voltage	V3	VCC = +9V	Fig.3	-	2	-	V
	V5			-	1.9	-	V
	V7			-	4.9	-	V
Total Current Drain	I <sub>d</sub>	VCC = +9V, RL3 = 5KΩ	Fig.3	3.5	5	7.5	mA
<b>DYNAMIC CHARACTERISTICS</b>							
Voltage Gain: Amplifier No.1 Amplifier No.2 Amplifier No.3	A1	f = 40 kHz, VCC = +9V		40	44	-	dB
	A2			40	46	-	dB
	A3			38	42	-	dB
Output Voltage Swing	V <sub>out</sub>	RL1 = 10KΩ RL2 = 10KΩ RL3 = 5KΩ Sinusoidal Output, VCC = +9V		-	2	-	Vp-p
	V <sub>1out</sub>			-	2.6	-	Vp-p
	V <sub>2out</sub> V <sub>3out</sub>			-	8	-	Vp-p
Input Resistance: Amplifier No.1 Amplifier No.2 Amplifier No.3	R <sub>1in</sub>	f = 40 kHz		-	50K	-	Ω
	R <sub>2in</sub>			-	2K	-	Ω
	R <sub>3in</sub>			-	670	-	Ω
Output Resistance	R <sub>1out</sub>	f = 40 kHz		-	270	-	Ω
	R <sub>2out</sub>			-	170	-	Ω
	R <sub>3out</sub>			-	100K	-	Ω
Bandwidth at -3dB point: Amplifier No.1 Amplifier No.2 Amplifier No.3	BW <sub>1</sub>	VCC = +9V	Fig.5 Fig.6 Fig.7	-	500	-	kHz
	BW <sub>2</sub>			-	2.5	-	MHz
	BW <sub>3</sub>			-	2.5	-	MHz
Noise Figure Amplifier No.1	NF <sub>1</sub>	f = 1 kHz, R <sub>S</sub> = 1KΩ	Fig.4	-	6	7	dB
Sensitivity		VCC = +13 V Relay (K <sub>1</sub> ) Current = 7.5 mA	Fig.2	-	100	150	μV

STATIC CHARACTERISTICS  
TEST CIRCUIT

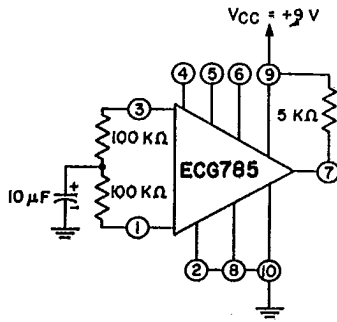
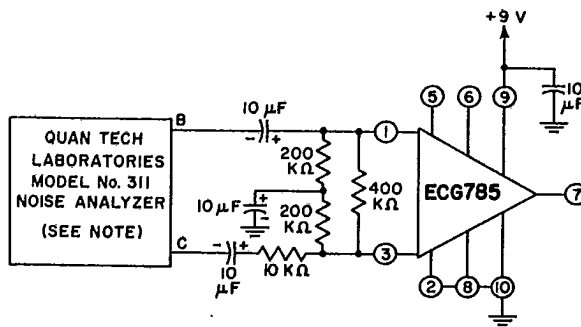


Fig.3

NOISE FIGURE TEST CIRCUIT



NOTE: SET ALL INTERNAL POWER SUPPLIES ON QUAN TECH NOISE ANALYZER TO ZERO VOLTS.

Fig.4

TYPICAL 1st-AMPLIFIER RESPONSE

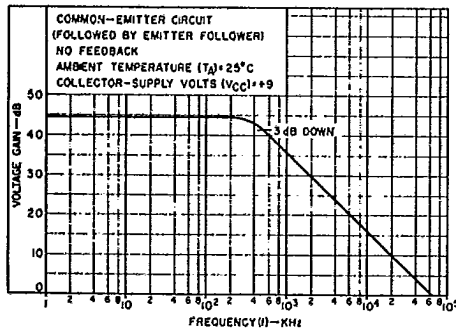


Fig.5

TYPICAL 2nd-AMPLIFIER RESPONSE

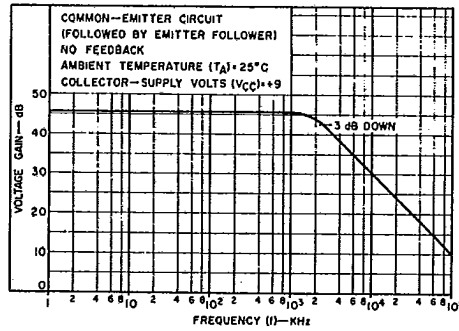


Fig.6

TYPICAL 3rd-AMPLIFIER RESPONSE

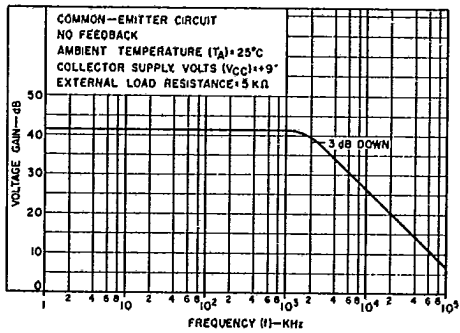


Fig.7